



July 2014

BULK FUEL PRICING

DOD Needs to Reevaluate Its Approach to Better Manage the Effect of Market Fluctuations

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Why GAO Did This Study

DOD purchases bulk fuel and sells it to customers, including the military services. Each fiscal year, DOD sets a standard price for budgeting purposes, endeavoring to closely approximate the price it will pay when it buys the fuel almost a year later. If this price is different than the standard price, DOD may need to take actions to manage its working capital funds—funds used to purchase fuel and other commodities that are reimbursed through sales.

Senate Report 113-44, accompanying a bill for the National Defense Authorization Act for FY 2014, mandated GAO to review DOD's approach for establishing its bulk fuel pricing. This report discusses, among other things, (1) how estimated bulk fuel costs have compared to actual costs since FY 2009 and the factors that have contributed to any differences; and (2) the extent to which DOD has considered options for adjusting its approach to estimating bulk fuel costs and managing working capital funds in light of any differences between estimated and actual fuel costs. GAO compared estimated and actual fuel costs for FY 2009 through 2013 and analyzed DOD actions to manage working capital funds.

What GAO Recommends

GAO recommends that DOD reevaluate its approach for estimating the components of the standard price and document the rationale for its assumptions. DOD agreed with the first recommendation and partially agreed with the second stating there is a closely-monitored, formal process. GAO continues to believe the recommendation remains valid as discussed in the report.

View [GAO-14-595](#). For more information, contact Cary Russell at (202) 512-5431 or russellc@gao.gov.

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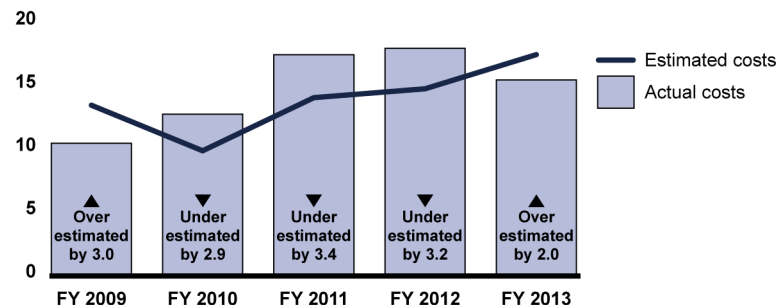
BULK FUEL PRICING

DOD Needs to Reevaluate Its Approach to Better Manage the Effect of Market Fluctuations

What GAO Found

During fiscal years 2009 through 2013, the Department of Defense's (DOD) actual costs for bulk fuel differed considerably from its budget estimates, largely because of fluctuations in fuel price in the open market. During this period, DOD underestimated its costs for 3 years and overestimated them for 2 years as shown below. GAO identified two factors that contributed to the differences between estimated and actual costs—(1) fuel price fluctuations and (2) differences between the military services' estimated fuel requirements and their actual fuel consumption. GAO's analysis showed that the differences between the price DOD paid for fuel and the price it charged its fuel customers—the standard price—accounted for, on average, 74 percent of the difference between estimated and actual costs. Specifically, of the three components of the standard price that DOD sets each fiscal year—crude oil, refinement markup, and nonproduct costs, such as transportation and facilities maintenance costs—differences in the price of crude oil accounted for most of the difference between estimated and actual fuel costs in fiscal years 2009 and 2010. In fiscal years 2011 through 2013, the refinement markup accounted for most of the difference. Differences between the services' estimated fuel requirements and actual fuel consumption accounted for an average of 26 percent of the difference between estimated and actual fuel costs.

Estimated vs. Actual Fuel Costs, Fiscal Years (FY) 2009 through 2013
Billions of dollars



Source: GAO analysis of DOD data. | GAO-14-595

Since 2004, DOD has conducted reviews of aspects of its bulk fuel program to determine whether adjustments should be made, including managing acquisition strategies, managing working capital funds, and budgeting for cost fluctuations. However, it has not updated its approach to reflect current market conditions or documented its rationale for the assumptions it uses in estimating the standard price. GAO's Cost Estimating and Assessment Guide and Office of Management and Budget guidance state that a cost estimate should be updated regularly to reflect changes to assumptions and actual costs, so that it always reflects current conditions. Furthermore, cost estimates should be supported by detailed documentation that describes how they were derived. Reevaluating its approach for estimating the standard price would allow DOD to develop more informed estimates and better position it to minimize risks and uncertainty resulting from changing market conditions. Further, documenting the rationale for its assumptions would provide greater transparency and clarify for fuel customers and decision makers the process DOD uses to set the standard price.

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Abbreviations

BBEDCA	Balanced Budget and Emergency Deficit Control Act
DLA	Defense Logistics Agency
DLA Energy	Defense Logistics Agency Energy Management Activity Group
DOD	Department of Defense
DWWCF	Defense-wide Working Capital Fund
FY	Fiscal Year
OMB	Office of Management and Budget
OUSD(C)	Office of the Under Secretary of Defense (Comptroller)
WTI	West Texas Intermediate

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July 8, 2014

Congressional Committees

For each fiscal year, the Department of Defense (DOD) sets a standard price per barrel that it will charge the military services and other customers for fuel. In setting this standard price, DOD endeavors to closely approximate the actual price it will pay for the fuel during the year of budget execution. However, due to the timing of DOD's budget process, the department estimates this price almost a year in advance of when it will actually purchase the fuel at the current market rate. Because of the volatility of world petroleum prices, the standard price DOD establishes for a barrel of fuel may be lower or higher than the price it will have to pay on the world market. For example, in fiscal year 2013, the price DOD paid for fuel ranged from around \$140 to \$164 per barrel—a difference of \$24 per barrel. If the actual market price of fuel is higher than the price DOD is charging its customers, DOD will have to pay more for fuel than it is being reimbursed. If the actual price is lower than the standard price, DOD will have more cash than it anticipated. Since fiscal year 2009, the military services have purchased an average of approximately 110 million barrels per year from DOD. Therefore, a standard price increase of even \$1 per barrel would result in a \$110 million difference from their budget requests.

To manage these price fluctuations, DOD uses the Defense-wide Working Capital Fund (the fund), which covers DOD's costs for purchasing various commodities, including bulk fuel, and is reimbursed through DOD's sale of these commodities to the military services and other customers, such as other federal agencies and foreign military sales. The fund is intended to insulate the military services and DOD's other fuel customers from the volatility of the market by allowing DOD to charge them a consistent standard price. In some instances, DOD may need to respond to fluctuations in world fuel prices by increasing or decreasing its standard price or by transferring funds from other accounts into its Defense-wide Working Capital Fund in order to maintain a sufficient cash balance in the fund.

The Senate report accompanying a bill for the fiscal year 2014 National Defense Authorization Act mandated that we review DOD's approach for

establishing its bulk fuel pricing.¹ This report discusses (1) how estimated bulk fuel costs have compared with actual costs since fiscal year 2009 and the factors that have contributed to any differences; (2) the extent to which DOD has taken actions to manage the effect of any differences between estimated and actual fuel costs; and (3) the extent to which DOD has considered options for adjusting its approach to estimating bulk fuel costs and managing working capital funds in the light of any differences in recent years between estimated and actual fuel costs.

To address these objectives we focused our analysis on fiscal years 2009 through 2013. We focused on these years because this period covered the most recent complete year of fuel sales and provided 5 years of cost data to analyze any trends. To determine the reliability of the data provided to us by DOD, we obtained information on how the data were collected, managed, and used through interviews with and questionnaires to relevant officials and determined that the data presented in our findings were sufficiently reliable for the purposes of this report.

To determine how estimated bulk fuel costs have compared with actual costs since fiscal year 2009 and the factors that contributed to any differences, we compared the estimated costs for fuel against actual costs in the budget year of execution to identify any differences. For these differences, we determined the percentage of the difference explained by either fuel price fluctuations or differences in fuel consumption compared with budgeted consumption levels. We then compared each of the three components of the standard price (crude oil price, refinement markup, and nonproduct costs—such as transportation and facilities maintenance costs) against the actual costs for each component to determine which contributed most to the difference.

To determine the extent to which DOD has taken actions to manage the effect of any differences between estimated and actual fuel costs, we reviewed monthly cash balances in the Defense-wide Working Capital Fund for fiscal years 2009 through 2013 to examine the effect that bulk fuel purchases and sales had on those balances. We also obtained information on the number and amount of approved transfer actions related to fuel into and out of the Defense-wide Working Capital Fund during this period. In addition, we identified all changes to the standard

¹S. Rep. No. 113-44, at 210 (2013).

price DOD charged to customers and identified any fuel-related supplemental appropriations received into the fund since fiscal year 2009.

To determine the extent to which DOD has considered options for adjusting its approach for estimating bulk fuel costs and managing working capital funds, we reviewed documentation, including budget justification materials and DOD reports, that describes DOD's current process for estimating bulk fuel costs and compared it with cost-estimating practices² and Office of Management and Budget (OMB)³ and DOD guidance.⁴ We also performed analysis on the relationship of the West Texas Intermediate (WTI) crude oil benchmark with other crude oil pricing benchmarks to determine whether DOD's approach to setting its standard price reflects current market conditions. We reviewed related studies and recommendations that we identified through interviews with DOD officials and literature searches that discuss options available to DOD to adjust its approach to managing bulk fuel costs and working capital funds. For this review we focused on relevant studies that have been conducted since 2004. We also interviewed DOD officials responsible for managing DOD's bulk fuel program, economic policy and budget officials from OMB, and officials from the Department of Energy's Energy Information Administration, which is the federal government's primary authority on energy statistics and analysis. Appendix I provides a more detailed discussion of our scope and methodology.

We conducted this performance audit from November 2013 to July 2014 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

²GAO, *GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs*, [GAO-09-3SP](#) (Washington, D.C.: March 2009). The methodology outlined in the *Cost Estimating and Assessment Guide* is a compilation of best practices that federal cost-estimating organizations and industry use to develop and maintain reliable cost estimates throughout the life of an acquisition program.

³OMB Circular No. A-11, *Preparation, Submission, and Execution of the Budget* (July, 2013).

⁴Department of Defense Financial Management Regulation 7000.14-R, Volume 2B (September, 2010).

Background

In each fiscal year, DOD establishes a standard price per barrel to be charged to its fuel customers. The Office of the Under Secretary of Defense (Comptroller), in coordination with the Defense Logistics Agency (DLA), estimates and sets a standard price for its fuel and other fuel-related commodities that endeavors to closely approximate the actual per barrel price during budget execution, which occurs almost a year later. The Office of the Under Secretary of Defense (Comptroller) sets the standard price annually based on three components.

- **Crude Oil**—The baseline for setting the standard price is the forecasted price for crude oil, which is provided to DOD by OMB. To estimate the cost of crude oil, the Council of Economic Advisors, the Department of the Treasury, and OMB—referred to as the Troika—jointly prepare a set of economic assumptions for agencies to use in preparing their overall budgets. In developing the crude oil price projections, the Troika uses oil price projections coming from the prices in the futures market for both West Texas Intermediate (WTI) and Brent crude oil prices.⁵ DOD uses the WTI projection as its baseline. According to OMB Circular A-11, all baseline estimates used in the budget must be consistent with the economic assumptions provided by OMB.⁶
- **Refinement Markup**—DOD adds a markup for the cost of refining the crude oil. Because DOD and its customers use refined oil products—such as jet fuel and diesel fuel—DOD has to include the additional cost of refining the fuel in its standard price.⁷ This refinement markup is estimated based on the historical price relationship between WTI crude oil and refined product prices.
- **Nonproduct Costs**—DOD adds an estimate for nonproduct costs associated with DLA’s overhead, including facilities sustainment, restoration, and modernization; transportation; and storage costs. Other nonproduct costs include an estimate of product losses and may include cost recovery adjustments for prior year fund losses to

⁵WTI is a crude oil produced in Texas and southern Oklahoma that serves as a reference or “marker” for pricing a number of other crudes and that is traded in the domestic spot market at Cushing, Oklahoma. Brent is a blended crude oil produced in the North Sea region that serves as a reference or “marker” for pricing a number of other crudes.

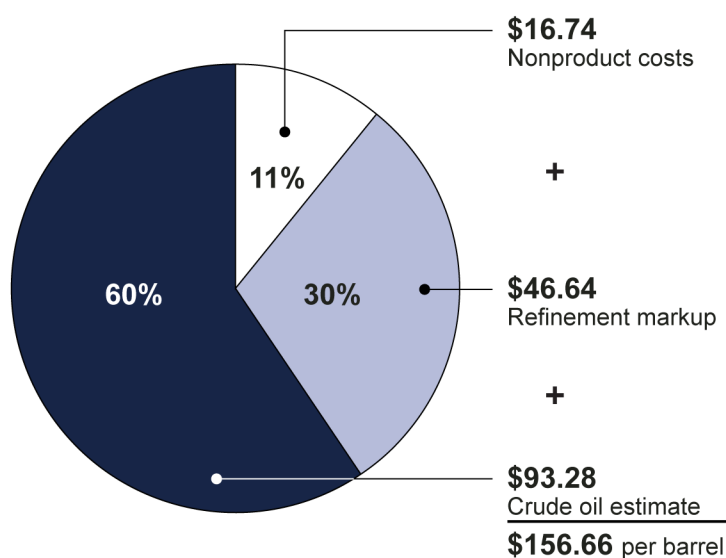
⁶OMB Circular No. A-11, *Preparation, Submission, and Execution of the Budget* (July, 2013).

⁷The refinement markup also accounts for some transportation expenses incurred by the supplier and charged to DLA for transporting the purchased fuel to DLA.

the Defense-wide Working Capital Fund, legal judgments, and rounding.

Figure 1 identifies each of the price components as a percentage of the total standard price for fiscal year 2013.

Figure 1: Components of Fiscal Year 2013 Standard Annual Fuel Price of \$156.66 Per Barrel

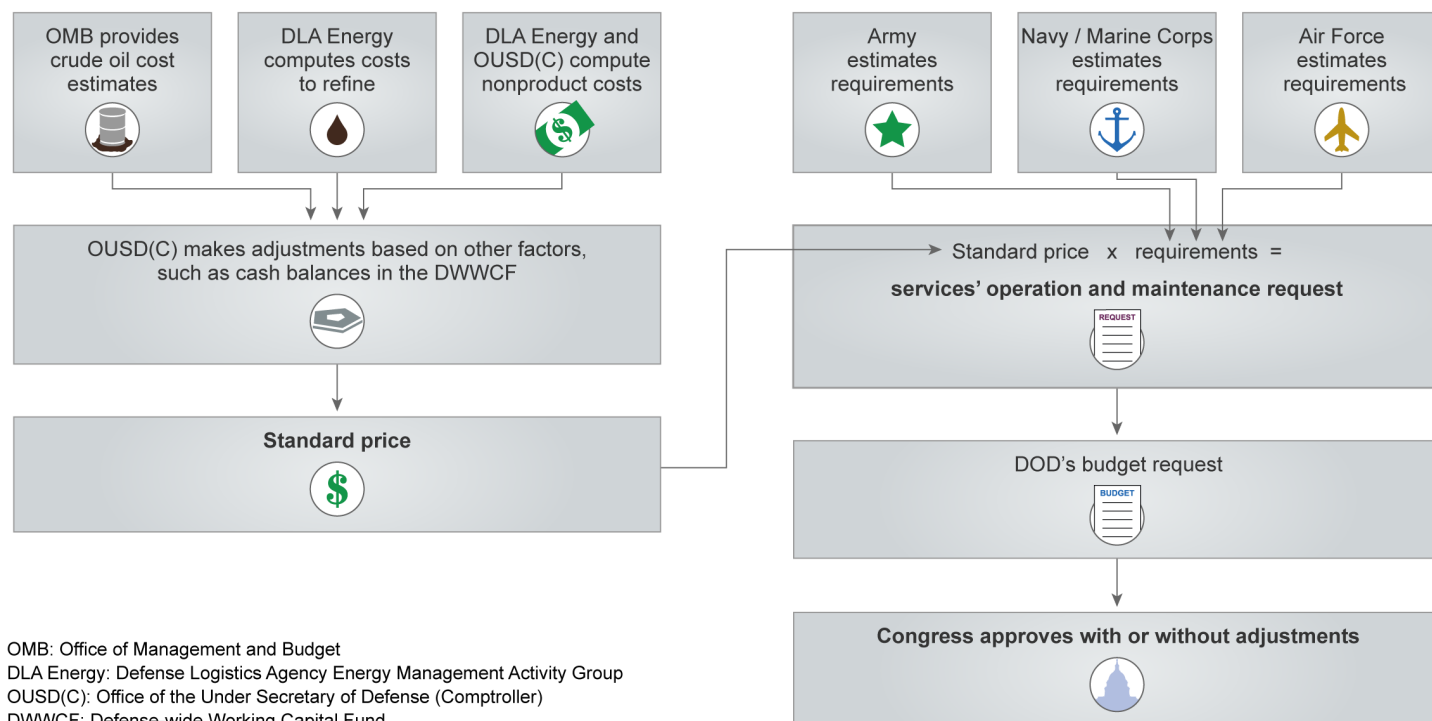


Source: GAO analysis of DOD data. | GAO-14-595

Notes: Percentages may not add to 100 percent due to rounding. According to DOD officials, the refinement markup is determined based on a percentage of the forecasted crude oil price. This markup has historically ranged from 30 percent to 50 percent of the price of crude oil. Nonproduct costs include facilities sustainment, restoration, and modernization; transportation; and storage costs.

In developing their annual operation and maintenance budget requests, the military services use the standard price and their estimated fuel requirements based on activity levels (such as flying hours, steaming days, tank miles, and base operations). For example, the Air Force as the largest DOD customer for fuel, purchased approximately 49 million barrels in fiscal year 2013, representing 53 percent of all sales to the military services. In determining its Operation and Maintenance funding needs, the Air Force provided an estimate for fuel in its budget request based on an analysis of each aircraft's fuel usage and future programmed flying hours. Figure 2 below generally illustrates the process and the main organizations involved in budgeting for fuel.

Figure 2: Budget Process for DOD Bulk Fuel Program



Source: GAO analysis of DOD information. | GAO-14-595

DOD utilizes its Defense-wide Working Capital Fund to purchase bulk fuel for customers. According to DOD's Financial Management Regulation, working capital funds were established to satisfy recurring DOD requirements using a businesslike buyer-and-seller approach. The Defense-wide Working Capital Fund is the Working Capital Fund managed by the defense agencies. The fund consists of six activity groups. Three of these activity groups are operated by DLA, two by the Defense Information Systems Agency, and one by the Defense Finance and Accounting Service. The activity group related to DOD's bulk fuel program is the DLA Energy Management Activity group, which provides worldwide energy support including bulk fuel purchasing, transportation, and storage for the military services and other customers.

The fund covers DLA's costs for purchasing bulk fuel and is reimbursed through its sale of fuel to the military services and other customers at a standard price. The standard price is intended to remain unchanged until the next budget year. This helps to shield the military services from market price volatility by allowing the cash balance in the fund to absorb

minor fuel price fluctuations.⁸ According to DOD's Financial Management Regulation, the goal of the fund is to remain revenue-neutral, allowing the fund to break even over time—that is, to neither make a gain nor incur a loss. During the year the budget is executed, the actual price for a barrel of fuel on the world market may be higher or lower than DOD's standard price. If the actual price is higher, the cash balance in the Defense-wide Working Capital Fund will go down. If the actual price is lower, the cash balance in the fund will go up. These fluctuations in the cash balance are known as a net outlay. To correct for these fluctuations, DOD may adjust the standard price for the following year. For example, DOD may increase the standard price to make up for losses in the previous year and bolster the cash balance in the fund. Alternatively, DOD may decrease the standard price to reimburse the services, which had paid a higher price the previous year. DOD can also cover fund losses during the execution year by obtaining an appropriation from Congress, transferring funds from another DOD account into the fund, or adjusting the standard price out of cycle.⁹

DOD's Actual Costs Differed Considerably from Budget Estimates since Fiscal Year 2009, Due Largely to Fluctuations in Fuel Price

During fiscal years 2009 through 2013, DOD's actual costs for bulk fuel differed considerably from its budget estimates, due largely to fluctuations in fuel price. During those years, DOD either under- or overestimated what it would have to pay for bulk fuel. The differences between estimated and actual fuel costs were accounted for primarily by fluctuations in the market price for fuel.

⁸According to DOD Financial Management Regulation 7000.14-R, Volume 2b, Chapter 9, cash levels in the Defense-wide Working Capital Fund should be maintained at 7 to 10 days of operational cost and 6 months of capital disbursements calculated using a formula provided in the regulation.

⁹DOD guidance requires that the department seek prior approval from the congressional defense committees for certain transfers between appropriations accounts and to reprogram funds within an appropriation above certain thresholds.

DOD's Actual Fuel Costs Differed from Its Budget Estimates

In each of fiscal years 2010, 2011, and 2012, DOD underestimated its bulk fuel costs by about \$3 billion. In 2009, DOD overestimated these costs by about \$3 billion and in 2013 by about \$2 billion. Table 1 shows the total difference between DOD's estimated and actual fuel costs for fiscal years 2009 through 2013.

Table 1: DOD Estimated vs. Actual Fuel Costs, Fiscal Years 2009 through 2013

Dollars in billions			
Fiscal year	Estimated costs ^a	Actual costs ^b	Over- or (under) estimate
2009	13.5	10.5	3.0
2010	9.9	12.8	(2.9)
2011	14.1	17.5	(3.4)
2012	14.8	18.0	(3.2)
2013	17.5	15.5	2.0

Source: GAO analysis of DOD data. | GAO-14-595

^aFor the purposes of our analysis, we calculated DOD's estimated costs by multiplying the standard price per barrel by the estimated number of barrels that the military services would consume.

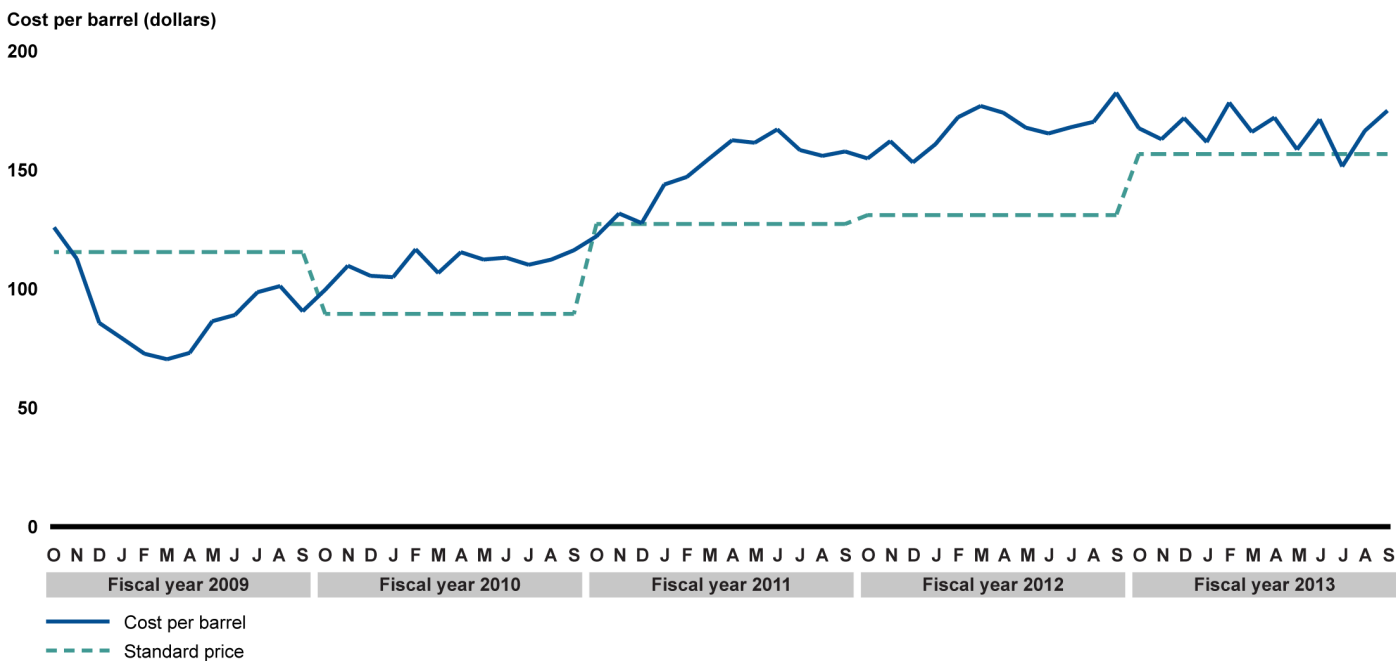
^bFor the purposes of our analysis, we calculated DOD's actual costs by multiplying the actual purchase price per barrel times the actual number of barrels sold to the military services.

Differences between Estimated and Actual Fuel Costs Were Largely Due to Fuel Price Fluctuations

We identified two primary factors that accounted for the difference between estimated and actual costs—(1) fluctuations in the market price of fuel and (2) differences between the services' estimated and actual fuel consumption. Our analysis showed that from fiscal years 2009 through 2013, the differences between the price DOD paid for fuel and the price it charged its fuel customers—the standard price—accounted for, on average, 74 percent of the difference between estimated and actual costs. In fiscal year 2012, for example, DOD estimated a standard price of \$131.04 per barrel. DOD's actual costs during that year averaged \$167.33 per barrel—an underestimate of \$36.29 per barrel—which represented 85 percent of the underestimate for fiscal year 2012.

Figure 3 compares the actual price DLA paid for fuel with the standard price DOD used to calculate its budget estimates.

Figure 3: Actual Cost per Barrel vs. Standard Price, Fiscal Years 2009 through 2013



Source: GAO analysis of DOD data. | GAO-14-595

Of the three components that constitute the standard price, crude oil prices and refinement markup costs accounted for most of the difference between the estimated standard price and actual fuel costs during fiscal years 2009 through 2013. In fiscal years 2009 and 2010, differences in the price of crude oil accounted for most of the difference between the estimated and actual prices—in 2009 for 95 percent of the difference and in 2010 for 72 percent. However, during fiscal years 2011 through 2013, the refinement markup became the main driver of the difference, accounting for between 65 and 79 percent of the difference, as shown in table 2.

Table 2: Analysis of Standard Price Components' Contributions to Difference between Estimated and Actual Price, Fiscal Years 2009 through 2013

Percentage of Price Difference Accounted for by Component by Fiscal Year					
Standard price components	2009	2010	2011	2012	2013
Crude oil	95	72	25	17	17
Refinement markup	4	22	65	79	70
Nonproduct costs	1	6	10	4	12

Source: GAO analysis of DOD and Energy Information Administration data. | GAO-14-595

Note: Percentages may not add to 100 due to rounding.

For fiscal years 2009 through 2012, DOD added a markup of 30 percent over the price of WTI to account for refinement costs in setting the standard price. According to DOD officials, the 30 percent markup over the WTI crude oil price had been a generally accurate predictive indicator for the price of DOD's actual refined fuel costs. However, in fiscal year 2011, actual fuel costs exceeded the price of WTI by an average of 49 percent and in 2012 by an average of 60 percent. Therefore, DOD set the refinement markup too low in those years. According to DOD officials, to account for these differences, DOD increased the markup for refinement costs from 30 percent to 50 percent of the WTI price when developing the standard price for fiscal year 2013.

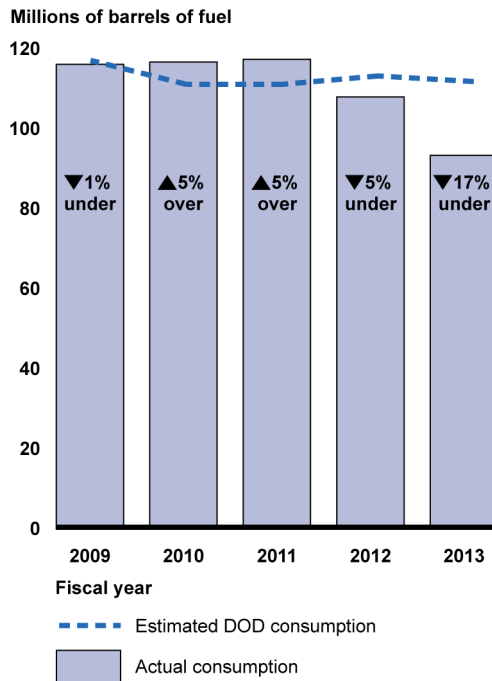
Although fluctuations in fuel prices were, on average, the primary driver of the differences between estimated and actual fuel costs in fiscal years 2009 through 2013, differences between the services' estimated and actual fuel consumption levels also contributed to the overall difference. These differences accounted for, on average, 26 percent of the difference between DOD's estimated and actual fuel costs. In fiscal years 2009 through 2012, the military services' estimated fuel requirements were within 5 percent of their actual consumption, as shown in figure 4. However, in fiscal year 2013, we found that differences between estimated and actual fuel consumption levels became the main driver of the total difference between estimated and actual fuel costs. In that year, DOD underestimated the cost of fuel but overestimated its consumption by approximately 19 million barrels, or 17 percent. According to DOD officials, actual consumption was much lower as a result of actions DOD

took to address sequestration.¹⁰ In November 2013, we reported that for fiscal year 2013, DOD's Operation and Maintenance accounts were reduced by approximately \$20 billion, or 7.2 percent, due to sequestration reductions. We identified several actions DOD took to address these budgetary reductions. For example, in fiscal year 2013, the Air Force initially ceased flight operations from April through June for about one-third of active-duty combat Air Force units. Also, the Army curtailed training for all units except those deployed, preparing to deploy, or stationed overseas, and the Navy limited flight training for nondeploying units.¹¹

¹⁰The absence of legislation to reduce the federal budget deficit by at least \$1.2 trillion triggered the sequestration process in section 251A of the Balanced Budget and Emergency Deficit Control Act of 1985 (BBEDCA), Pub. L. No. 99-177 (1985), as amended. Pursuant to the BBEDCA, the President ordered sequestration of budgetary resources across nonexempt federal government accounts on March 1, 2013—5 months into fiscal year 2013.

¹¹GAO, *Sequestration: Observations on the Department of Defense's Approach in Fiscal Year 2013*, [GAO-14-177R](#) (Washington D.C.: Nov. 7, 2013).

Figure 4: Military Services' Estimated vs. Actual Fuel Consumption, Fiscal Years 2009 through 2013



Source: GAO analysis of DOD data. | GAO-14-595

DOD Has Taken Various Actions to Manage the Effect of Differences between Estimated and Actual Fuel Costs

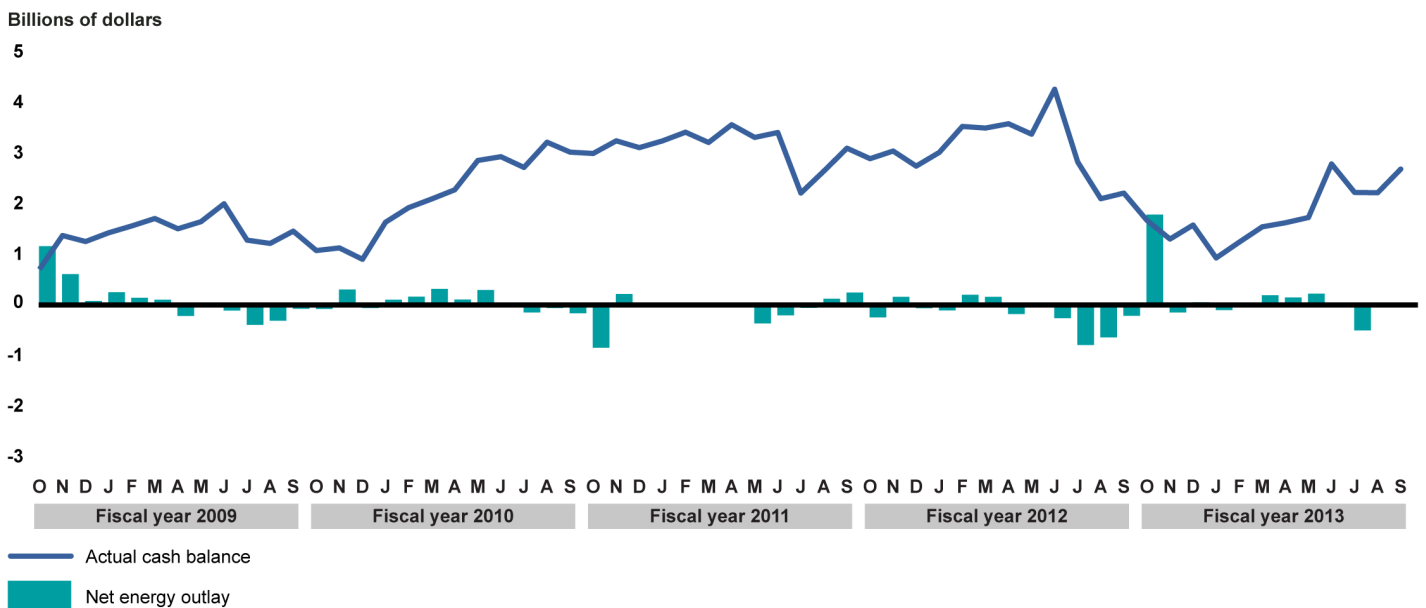
DOD has taken actions to manage fluctuations in the cash balance of the Defense-wide Working Capital Fund caused by differences between its estimated and actual fuel costs. These actions included transferring funds into the Defense-wide Working Capital Fund from other accounts and adjusting the standard price DOD charged to its fuel customers.

Cash Balances in the Defense-Wide Working Capital Fund Fluctuate Due to Changing Fuel Prices

The Defense-wide Working Capital Fund provides the cash balance that is used to fund the day-to-day operations for six defense-wide activity groups, including DLA Energy, which provides, among other things, worldwide energy support to the military services and other authorized customers for bulk fuel purchasing, transportation, and storage. According to a DOD report, the volatility of fuel prices has historically posed a challenge to managing the cash balance of the fund.¹² When DLA pays more or less for fuel than the standard price it charges its customers, the cash balance in the Defense-wide Working Capital Fund will go down or up. For instance, if fuel market prices rise significantly relative to the standard price, the cash balance in the fund will go down. On the other hand, if fuel market prices decrease relative to the standard price, the fund will generate excess cash and the balance will go up. In fiscal years 2009 through 2013, the fluctuations in the cash balance of the Defense-wide Working Capital Fund were partially driven by these net outlays for fuel, as shown in figure 5.

¹²Department of Defense, *Defense Working Capital Fund: Revolving Funds Operational Cash Balances* (January 2012).

Figure 5: Cash Balance in the Defense-Wide Working Capital Fund and Net Outlays for Fuel, Fiscal Years 2009 through 2013



Source: GAO analysis of DOD data. | GAO-14-595

Note: The Defense-wide Working Capital Fund cash balance is used to fund fuel and other commodities and services. Net outlays for these other commodities and services can also affect the cash balance in the fund.

DOD Used Fund Transfers and Adjustments to Its Standard Price to Manage Working Capital Fund Balances

The Defense-wide Working Capital Fund is intended to provide DOD with the flexibility to absorb some fluctuation in fuel prices. However, in some instances, DOD has sought to manage the fluctuations in the fund's cash balance by transferring money into or out of the fund or by adjusting its standard price.¹³ For example, in fiscal years 2012 and 2013, DOD transferred funds into the Defense-wide Working Capital Fund. In 2012, DOD transferred \$1 billion into the fund from the Afghanistan Security Forces Fund and in 2013 another \$1.4 billion from various accounts,

¹³Another option available to DOD for managing cash balance fluctuations is to request supplemental appropriations into the Defense-wide Working Capital Fund. However, during fiscal years 2009 through 2013, according to DOD budget-justification documents, DOD did not request supplemental appropriations into the Defense-wide Working Capital Fund to specifically address the effect of changing fuel prices. According to DOD budget materials, DOD did receive supplemental appropriations each year from fiscal years 2009 through 2013, but these funds were primarily requested to address Overseas Contingency Operations transportation costs and costs associated with combat fuel losses.

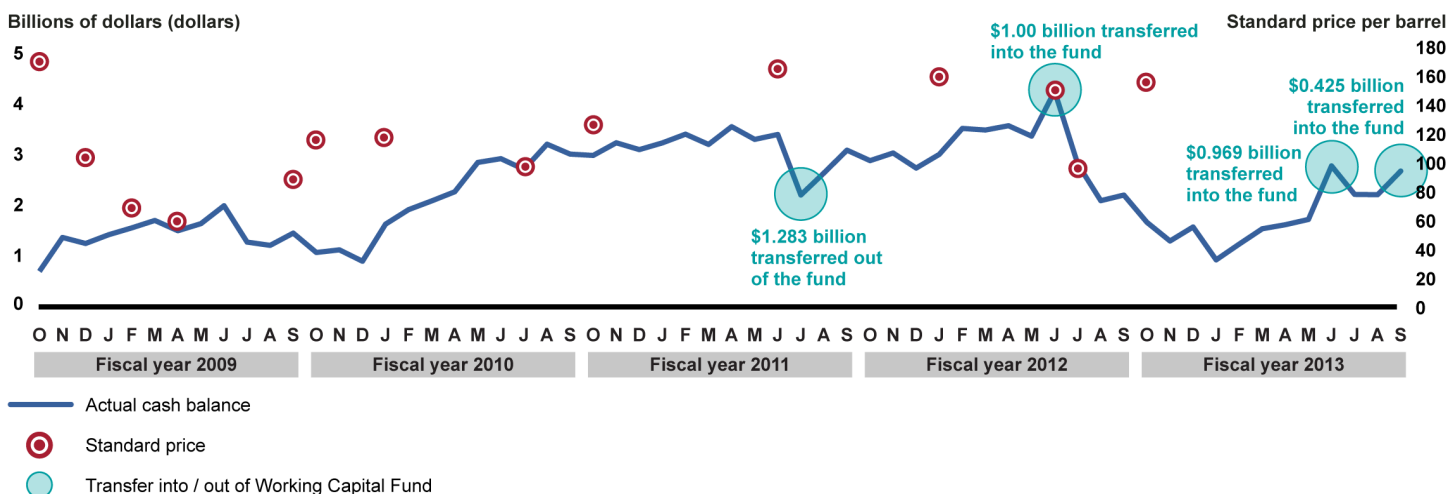
including the Foreign Currency Fluctuations account, to mitigate the cash shortfall caused by an increase in fuel costs over the standard price. DOD also transferred cash out of the fund during the period of our review. Specifically, in fiscal year 2011, Congress reduced funding for several DOD operation and maintenance accounts by about \$2 billion to reflect excess cash balances in the Defense-wide Working Capital Fund.¹⁴ In response, DOD transferred almost \$1.3 billion out of the Defense-wide Working Capital Fund to fund the reduced operation and maintenance accounts. We found that these transfers into or out of the fund can affect adjustments to the standard price. For example, according to DOD officials, the fiscal year 2013 transfer allowed DOD to maintain the same standard price throughout that year even though actual fuel costs exceeded the standard price. A DOD study noted that the fiscal year 2011 transfer out of the fund required DOD to increase its standard price by almost \$40 per barrel because the cash balance in the Defense-wide Working Capital Fund was no longer sufficient to mitigate the increased costs of fuel in that year.¹⁵

DOD also used changes to the standard price to manage the cash balance in the Defense-wide Working Capital Fund. From the beginning of fiscal year 2009 through end of fiscal year 2013, DOD adjusted its standard price 13 times—increasing it 6 times and decreasing it 7 times. According to DOD, these price changes were due to changing product costs, approved transfers, and the availability of cash balances in the fund. For example, the fiscal year 2012 President’s Budget estimated a standard price of \$131.04. However, in October 2011, DOD raised the standard price to \$165.90. It then lowered the price to \$160.44 in January 2012, to \$151.20 in June 2012 and finally to \$97.02 in July 2012, where the price remained for the rest of the fiscal year. Figure 6 shows the transfers and standard prices during fiscal years 2009 through 2013 and the cash balances in the Defense-wide Working Capital Fund.

¹⁴Department of Defense and Full-Year Continuing Appropriation Act, 2011, Pub. L. No. 112-10, Division A, § 8097 (2011).

¹⁵Department of Defense, *Defense Working Capital Fund: Revolving Funds Operational Cash Balances*, (January 2012).

Figure 6: Defense-Wide Working Capital Fund Balance, Transfers, and Standard Prices



Standard price adjustments affect the military services. According to DOD officials, an adjustment to the standard price is not their preferred option for managing the fund's cash balances because of the potential strain it places on the services' budgets. For example, a Navy official told us that when the standard price is increased, the Navy must either reduce consumption by curtailing training or request additional funding. Fiscal year 2013 was the first year since 2004 during which DOD maintained its standard price for the entire year.

DOD Has Conducted Studies on Its Management of Working Capital Funds, but Has Not Reevaluated Its Approach or Documented Its Assumptions for Estimating Fuel Costs

DOD has studied various aspects of its bulk fuel program since 2004, but it has not updated its current approach for setting the standard price to reflect current market conditions or documented its rationale for the assumptions it uses in estimating the standard price—even though the differences between its estimated and actual costs have been considerable since that time.

DOD Has Conducted Various Studies on Its Bulk Fuel Program, Including Management of Working Capital Funds

Since 2004, DOD has completed a number of studies reviewing various aspects of its bulk fuel program, including studies of its management of working capital funds. We identified six studies related to DOD bulk fuel pricing and management of the Defense-wide Working Capital Fund. See appendix II for a description of the purpose of the studies and any identified findings, including the status on any proposed recommendations.

The John Warner National Defense Authorization Act for Fiscal Year 2007 required the Secretary of Defense to submit a report on fuel rate and the cost projections used in the DOD budget presentation.¹⁶ In response, DOD completed a study in February 2007 that compared the crude oil forecast provided by OMB with crude oil forecasts developed by the Department of Energy and 38 private forecasting companies.¹⁷ Based on its analysis, DOD elected to maintain its current approach—using OMB’s WTI forecast as its preferred baseline—because the study concluded that OMB’s forecasts were comparable to or better at

¹⁶Pub. L. No. 109-364, § 1006 (2006).

¹⁷Secretary of Defense, *Report to Congressional Defense Committees: Budgeting for Fuel Cost Fluctuations* (February 2007).

estimating the actual crude oil price than the alternative forecasts it evaluated.¹⁸

More recently, in January 2012, in response to the Ike Skelton National Defense Authorization Act for Fiscal Year 2011,¹⁹ the Office of the Under Secretary of Defense (Comptroller) reviewed alternatives for managing the balances of the Defense-wide Working Capital Fund. The study found that fuel cost volatility poses a major threat to the fund's solvency.²⁰ As a result, the study concluded that DOD may need to request funding transfers that could disrupt investment programs or threaten readiness. The study recommended two alternatives for managing working capital funds. The first would allow DOD to transfer expiring unobligated balances from other appropriation accounts into the fund to build a cash reserve. The study noted that this alternative is similar to authorities provided to other federal agencies' working capital funds, but that it would require statutory authorization. The second alternative would allow the fund to accumulate and reserve funds in times of positive cash flow—up to \$12.5 billion, or two times the largest cash shortfall on record. The Office of the Under Secretary of Defense (Comptroller) identified several concerns with this alternative. For example, according to the study, DOD would need congressional authorization to accumulate positive operating results. Additionally, the study noted that maintaining a large cash balance in the fund to mitigate potential price risk is not a productive use of resources. According to DOD officials, DOD's Financial Management Regulation is currently being updated with an estimated issuance of summer 2014 to allow for greater flexibility in developing cash balance targets for the Defense-wide Working Capital Fund.

The 2012 study also listed other alternatives for managing working capital fund balances, which it did not recommend due to certain limitations,

¹⁸The act further required us to review DOD's report, including the basis for the Secretary's conclusions for the preferred approach. We found that the analysis DOD was able to conduct did not provide a compelling reason for DOD to adjust its rate setting approach, but concluded that DOD would need to capture and maintain the necessary forecast data to conduct a more robust and extensive analysis in the future. See GAO, *Defense Budget: Review of DOD's Report on Budgeting for Fuel Cost Fluctuations*, [GAO-07-688R](#) (Washington, D.C.: Apr. 26, 2007).

¹⁹Pub. L. No. 111-383 § 1402 (2011).

²⁰Department of Defense, *Defense Working Capital Fund: Revolving Funds Operational Cash Balances* (January 2012).

risks, and costs. These included some alternatives that had previously been studied and recommended by the Defense Business Board.²¹ For example, the Defense Business Board had previously studied the feasibility of hedging fuel on the open market, which includes purchasing financial instruments to minimize risk in future prices.²² However, according to the study, DOD has elected not to pursue hedging for a number of reasons including that it is outside of DOD's current authority, would incur management fees that would increase total costs, and poses additional political and economic risk. The 2012 study also rejected the Defense Business Board's recommendations to implement firm-fixed-price fuel contracts and to partner with the Department of the Interior to access additional funds when fuel costs increase. The study noted that firm-fixed-price contracts would shift pricing risk to the supplier, which would be likely to result in DOD paying a premium for the contracts.

DOD Has Not Reevaluated Its Approach or Documented its Assumptions for Setting the Standard Price

According to GAO's Cost Estimating and Assessment Guide, a cost estimate should be updated regularly to reflect significant changes—such as changes to assumptions—and actual costs, so that it always reflects current conditions.²³ Also, according to the guide, major assumptions should be assessed to determine how sensitive they are to changes, and risk and uncertainty analysis should be performed to determine the level of risk associated with the estimate. Further, OMB guidance states that agencies should consider the effect that demographic, economic, or other changes can have on assumptions for program levels beyond the budget year.²⁴ However, the assumptions that DOD uses for setting the crude oil component of the standard price do not reflect current market conditions. Specifically, DOD's assumptions do not consider (1) differences between crude oil benchmarks, (2) differences between domestic and international crude oil prices, and (3) the decreasing relationship between crude oil and refined prices.

²¹The Defense Business Board provides the Secretary and Deputy Secretary of Defense, as well as other senior leaders, an outside private-sector perspective on best business practices for consideration and potential application to DOD.

²²Defense Business Board, *Report to the Senior Executive Council, Department of Defense: Fuel Hedging Task Group*, Report FY03-08 (Mar. 1, 2004).

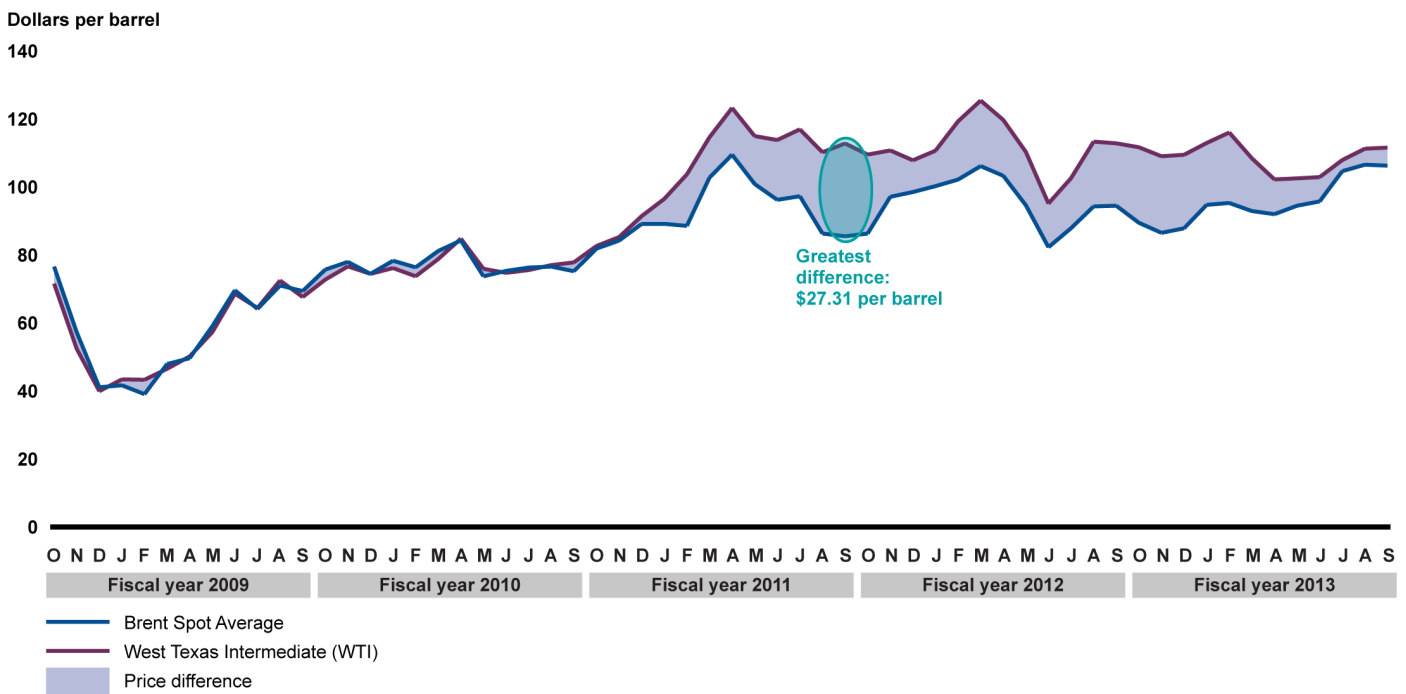
²³[GAO-09-3SP](#).

²⁴OMB Circular No. A-11, *Preparation, Submission, and Execution of the Budget* (July, 2013).

DOD's approach for establishing the standard price has not accounted for changes in market conditions for crude oil. As discussed earlier in this report, DOD's process of adding a refinement markup to the price of WTI in setting the standard price has resulted in estimated fuel costs that have been considerably lower than actual fuel costs. We found that, from fiscal years 2010 through 2013, the price for WTI diverged from other crude oil pricing benchmarks. According to a report from the Energy Information Administration, WTI was selling during this period for less than other crude oil pricing benchmarks, such as Brent—a commonly used crude oil benchmark.²⁵ The price spread between WTI and Brent reached a high of \$27 per barrel in September 2011, as shown in figure 7. Energy Information Administration officials also told us that, although the price spread between Brent and WTI has narrowed recently, they believe that the relationship between the pricing of Brent and WTI may remain volatile and that a price spread between the two benchmarks will likely continue. In its April 2014 Short-Term Energy Outlook, the Energy Information Administration estimates that in calendar year 2015 the price of WTI will be about \$11 per barrel less than the price of Brent.

²⁵ Congress created the Energy Information Administration within the Department of Energy in 1977. As a statistical agency, it provides policy-independent data, forecasts, and analyses to promote sound policy making, efficient markets, and public understanding regarding energy and its interaction with the economy and the environment. According to the Energy Information Administration, the depression in the price of WTI was a result of rapid growth in U.S. and Canadian oil production, which overwhelmed the transportation infrastructure needed to move crude oil from Cushing, Oklahoma, where WTI is quoted. See U.S. Energy Information Administration, *Annual Energy Outlook 2013*, DOE/EIA-0383(2013) (April 2013).

Figure 7: Differences between Brent and West Texas Intermediate Crude Oil Prices, Fiscal Years 2009 through 2013



Source: GAO Analysis of Energy Information Administration data. | GAO-14-595

Note: WTI is a crude oil produced in Texas and southern Oklahoma that serves as a reference or "marker" for pricing a number of other crudes and that is traded in the domestic spot market at Cushing, Oklahoma. Brent is a blended crude oil produced in the North Sea region that serves as a reference or "marker" for pricing a number of other crudes.

Recognizing this market change, other federal agencies have adjusted their crude oil benchmarks for estimating energy prices because of this price spread. For example, in its 2013 Annual Energy Outlook, the Energy Information Administration shifted from WTI to Brent for estimating energy prices. According to officials from the Energy Information Administration, Brent crude oil prices have become the primary international crude oil benchmark. Furthermore, these officials noted that worldwide petroleum product prices—including in the United States—are typically based on Brent prices. This is consistent with DLA's analysis, which found that domestic refined fuel products are more closely related with Brent than with WTI prices.

OMB has also accounted for other crude oil benchmarks in its annual economic assumptions that are provided to federal agencies for

budgeting purposes. According to officials from DOD and OMB, beginning with the fiscal year 2014 budget cycle, OMB began providing DOD and other federal agencies with forecasted Brent prices in addition to WTI prices. OMB officials told us that although OMB Circular A-11 requires that federal agencies' budget estimates be consistent with OMB's economic assumptions, DOD has discretion over which economic assumptions, such as an appropriate crude oil benchmark, to apply in developing its bulk fuel estimates.

We identified other market conditions that DOD has not accounted for with its current approach to determining the crude oil component of the standard price. For example, DLA purchases about half of its fuel from overseas refiners. From fiscal years 2009 through 2013, DLA purchased, on average, 48 percent of its fuel from overseas sources. However, WTI is a pricing benchmark only for domestic crude oil. Because DOD uses WTI, its baseline for setting the standard price does not account for any potential price differences between domestic and overseas purchases. Furthermore, officials at DOD also expressed concerns that crude oil may no longer be a good indicator for refined product prices. According to an official from the Office of the Under Secretary of Defense (Comptroller), in recent years the relationship between crude oil prices and the price of DOD refined products has not been as closely related as it has in the past. This is consistent with our own analysis. Specifically, for fiscal years 2009 through 2013 we compared the actual price DLA paid for fuel with the actual price of other fuel products—including WTI crude oil, Brent crude oil, and commercial jet fuel—to determine the relationship among these prices. Based on our analysis of data from the Energy Information Administration, we found that in each year the prices DLA paid for fuel had a closer relationship with commercial jet fuel prices than with either WTI or Brent crude oil prices.

To compensate for the limitations in its crude oil baseline, DOD has adjusted other components of its standard price. For example, as discussed earlier in this report, beginning in fiscal year 2013, DOD increased the refinement markup component of the standard price from 30 percent to 50 percent to account for the divergence between WTI and other crude oil pricing benchmarks. DOD has continued to use the 50 percent refinement markup in setting its standard price for fiscal years 2014 and 2015. This practice means that DOD is using the markup not only to account for refinement costs, but to cover the price spread between WTI and other crude oil pricing benchmarks. By using the increased refinement markup to compensate for the price spread, DOD is not addressing the underlying limitations with its crude oil baseline.

Rather, DOD is adding further risk and uncertainty concerning its estimate, because the estimate must now account for additional price variables.

Even though in recent years its methodology has been producing estimates that differ significantly from actual costs, DOD has not reevaluated its approach or documented the rationale behind the assumptions it uses for setting the standard price. DOD's 2007 study found that its forecasting methodology produced results as good as or better than the forecasting models the study compared it with.²⁶ However, that study focused exclusively on the crude oil component of the standard price. It did not evaluate the accuracy of the standard price methodology as a whole against other potential approaches. Moreover, since that time, DOD has not reevaluated whether using WTI as its baseline assumption—with the corresponding refinement markup—is still appropriate given recent market changes. Further, DOD has not considered whether a crude oil baseline is still reasonable at all. Officials from the Office of the Under Secretary of Defense (Comptroller) told us that they have held internal discussions regarding changing the crude oil pricing baseline used in the standard price, but no final decision has been made.

Furthermore, DOD has not fully documented its rationale and assumptions for establishing each component of the standard price. GAO's Cost Estimating and Assessment Guide states that a cost estimate should be supported by detailed documentation that describes how it was derived.²⁷ According to the guide, the documentation should include, among other things, the estimating methodology used to derive the costs for each element of the cost estimate, and it should also discuss any limitations of the data or assumptions. Further, a well-documented methodology allows decision makers to understand and evaluate the budget request and make proper determinations. According to an official from the Office of the Under Secretary of Defense (Comptroller) responsible for overseeing DOD's bulk fuel program, DOD's Financial Management Regulation provides overarching guidance on establishing prices for working capital fund products, including fuel. Specifically, the

²⁶Secretary of Defense, *Report to Congressional Defense Committees: Budgeting for Fuel Cost Fluctuations* (February 2007).

²⁷[GAO-09-3SP](#).

Financial Management Regulation provides that all business areas of the fund are required to set their prices based upon full cost recovery, including general and administrative support provided by others. This official noted that DOD's process for setting the standard price is based on this full cost recovery, as described in specific guidance in the Financial Management Regulation. Additionally, federal guidance also governs aspects of the rate-setting process. For example, OMB's A-11 Circular requires DOD's budget estimates for fuel to be consistent with OMB's economic assumptions. For this reason the official stated that the establishment of a more specific methodology could be potentially redundant to the existing process, and could add additional administrative hurdles that may not add value.

However, while DOD's Financial Management Regulation provides overall principles for working capital funds, it does not require DOD to document its methodology for setting the standard price in a step-by-step process. Therefore, DOD does not have detailed documentation that describes the rationale for the assumptions it uses. For example, DOD has not documented its rationale for continuing to select WTI as a crude oil benchmark in establishing the standard price although OMB now provides more than WTI crude oil forecasts in its economic assumptions. Also, according to the Office of the Under Secretary of Defense (Comptroller) official, DOD determines its refinement markup to account for the fact that DLA purchases refined product and does not buy crude oil and that this factor is developed based on current commodity market experience balanced against DOD priorities. However, DOD has not documented its rationale or assumptions for determining these trade-offs. Reevaluating its approach for estimating the components of the standard price would allow DOD to develop more informed estimates and better position DOD to minimize risks and uncertainty resulting from changing market conditions. Further, documenting the rationale for its assumptions would provide greater transparency and clarify for fuel customers and decision makers the process DOD uses to set the standard price.

Conclusions

DOD has faced challenges in setting a standard price that closely approximates its actual fuel costs, and in recent years its estimated fuel prices have differed considerably from its actual costs. Actual prices have differed from DOD's estimates largely because changes in fuel market conditions have not been reflected in the standard price. Additionally, DOD has not documented its rationale for continuing to use the same assumptions. The Defense-wide Working Capital Fund, designed to absorb the effects of price fluctuations, has been insufficient to absorb the

significant net outlays for fuel. This has led to large transfers into the fund from other DOD accounts and adjustments to the standard price DOD charges to customers—disrupting other DOD programs and straining the military services’ budgets. Despite the recurring need for these transfers and price adjustments, DOD has not reevaluated its approach to setting the standard price since 2007. Until DOD has reevaluated its approach and documented its assumptions for setting the standard price, it may not be certain that its price reflects current conditions.

Recommendations for Executive Action

To improve DOD’s process for setting its standard fuel price, we recommend that the Secretary of Defense direct the Office of the Under Secretary of Defense (Comptroller), in coordination with the Defense Logistics Agency (DLA), to take the following two actions:

- reevaluate the approach for estimating the components of the standard price and
- document its assumptions, including providing detailed rationale for how it estimates each of these components.

Agency Comments and Our Evaluation

We provided a draft of this report to DOD, OMB, and the Energy Information Administration for review and comment. DOD provided written comments, which are summarized below and reprinted in appendix III. In its comments, DOD concurred with the first recommendation and partially concurred with the second recommendation. OMB and the Energy Information Administration did not provide comments on the draft report.

DOD concurred with the first recommendation that the Secretary of Defense direct the Under Secretary of Defense (Comptroller), in coordination with DLA, to reevaluate DOD’s approach for estimating the components of the standard price. In its comments, DOD stated that this is an ongoing effort within the department and that the Office of the Under Secretary of Defense (Comptroller) and DLA are continually evaluating methods to better estimate the price of fuel. DOD stated that this is a challenge because the rate-setting process takes place a budget cycle in advance of execution. DOD noted that fuel-market volatility affects the Working Capital Fund’s ability to budget for, and customers’ ability to buy, fuel at a stabilized price. Additionally, in its comments, DOD stated that the department does not have the storage capacity to hold a year’s worth of fuel in advance, so fuel is purchased in real time throughout the execution year and sold at a price set 18 months prior. We agree that the rate-setting process is challenging, given the timing of DOD’s budget

process and when the department actually purchases fuel. However, as stated in the report, DOD's current approach for establishing the standard price has not accounted for changes in market conditions for crude oil, such as the decreasing relationship between crude oil and refined prices, even though its methodology has been producing estimates that differ greatly from actual costs. Although DOD noted in its comments that it is continually evaluating methods to better estimate the price of fuel, it did not specify any specific initiatives to that end. Moreover, the report did not identify any studies that DOD has undertaken since 2004 that constitute a reevaluation of the department's approach for estimating the components of the standard price. Reevaluating its approach for estimating the components of the standard price would allow DOD to develop more-informed estimates and better position the department to minimize risks and uncertainty resulting from changing market conditions.

DOD partially concurred with the second recommendation that the Secretary of Defense direct the Under Secretary of Defense (Comptroller), in coordination with DLA, to document its assumptions, including providing a detailed rationale for how it estimates each of the standard price components. In its comments, DOD stated that the department does not have a "documented" specific, step-by-step process to develop the fuel price. DOD further stated that it prices fuel by using a formal process that has been presented to the department's leadership, briefed to congressional staffers, discussed with the administration, and reproduced in various instructional and informational briefings and papers. In its comments, DOD stated that the process for setting the fuel price is similar to other Working Capital Fund products and follows the intent of DOD's Financial Management Regulation and congressional implementing language for full cost recovery. We stated in the report that DOD's Financial Management Regulation provides overall principles for working capital funds, but it does not require DOD to document its methodology for setting the standard price in a step-by-step process. Therefore, DOD does not have detailed documentation that describes the rationale for the assumptions it uses, such as its rationale for selecting one crude oil benchmark over another benchmark or the factors and other tradeoffs that it considers when establishing the refinement markup. GAO's Cost Estimating and Assessment Guide states that a cost estimate should be supported by detailed documentation that describes how it was derived.²⁸ According to the guide, the documentation should

²⁸ [GAO-09-3SP](#).

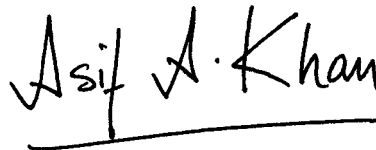
include, among other things, the estimating methodology used to derive the costs for each element of the cost estimate, and it should also discuss any limitations of the data or assumptions. Documenting DOD's assumptions, including the rationale for each component of the standard price, would provide greater transparency and clarify for fuel customers and decision makers the process DOD uses to set the standard price.

We are sending copies of this report to appropriate congressional committees and the Secretary of Defense; the Under Secretary of Defense (Comptroller); the Director of DLA; the Director of OMB; and the Administrator of the Energy Information Administration. In addition, this report is available at no charge on GAO's website at <http://www.gao.gov>.

If you or your staff have questions about this report, please contact Cary Russell at (202) 512-5431 or russellc@gao.gov, or Asif A. Khan at (202) 512-9869 or khana@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributors to this report are listed in appendix IV.

A handwritten signature in black ink that reads "Cary Russell". The signature is fluid and cursive, with the first name "Cary" and last name "Russell" clearly distinguishable.

Cary Russell
Director
Defense Capabilities and Management

A handwritten signature in black ink that reads "Asif A. Khan". The signature is written in a cursive style, with the first name "Asif" and last name "Khan" clearly distinguishable. There is a horizontal line drawn under the signature.

Asif A. Khan
Director
Financial Management and Assurance

List of Committees

The Honorable Carl Levin
Chairman
The Honorable James M. Inhofe
Ranking Member
Committee on Armed Services
United States Senate

The Honorable Richard Durbin
Chairman
The Honorable Thad Cochran
Ranking Member
Subcommittee on Defense
Committee on Appropriations
United States Senate

The Honorable Howard P. "Buck" McKeon
Chairman
The Honorable Adam Smith
Ranking Member
Committee on Armed Services
House of Representatives

The Honorable Rodney Frelinghuysen
Chairman
The Honorable Pete Visclosky
Ranking Member
Subcommittee on Defense
Committee on Appropriations
House of Representatives

Appendix I: Scope and Methodology

To address our objectives, we focused our analysis on fiscal years 2009 through 2013. We focused on these years because this period covered the most recent complete year of the Department of Defense's (DOD) fuel sales and provided 5 years of cost data to analyze any trends. To determine how estimated bulk fuel costs have compared with actual costs since fiscal year 2009 and identify the factors that contributed to any differences, we compared the estimated budget costs for fuel against actual costs in the budget year of execution and identified any differences. We calculated DOD's estimated fuel costs by multiplying the standard price per barrel by the number of barrels the military services estimated they would consume. To calculate DOD's actual fuel costs, we multiplied the actual purchase price per barrel by the number of barrels sold to the military services. We then determined which factors contributed to the overall differences. Specifically, we calculated the percentage of the overall difference explained by either fuel price fluctuations or differences between estimated fuel consumption and actual consumption. Next, we compared each of the three components of the standard price (crude oil price, refinement markup, and nonproduct costs—such as transportation and facilities maintenance) against the actual costs for each component to determine which one contributed most to the difference between the standard price and actual fuel costs. We also interviewed officials from the Office of the Under Secretary of Defense (Comptroller), the Defense Logistics Agency (DLA), the military services, and the Department of Energy's Energy Information Administration to discuss the factors that contributed to these differences.¹

To determine the extent to which DOD has taken actions to manage the effect of any differences between estimated and actual fuel costs, we reviewed monthly cash balances in the Defense-wide Working Capital Fund for the period October 2008 through September 2013 and determined the effect of bulk fuel purchases and sales on those balances. In doing so, we determined net outlays from the Defense-wide Working Capital Fund and compared them with the cash balance in the fund. We analyzed DOD financial management documents for this same period to determine the number and amount of approved transfer actions related to

¹Congress created the Energy Information Administration within the Department of Energy in 1977. As a statistical agency, it provides policy-independent data, forecasts, and analyses to promote sound policy making, efficient markets, and public understanding regarding energy and its interaction with the economy and the environment.

fuel into and out of the Defense-wide Working Capital Fund and any fuel-related supplemental appropriations received into the fund. In addition, we analyzed DOD budget-justification materials and other documentation to identify all changes to DOD's standard price. We also interviewed officials from DOD and the military services to determine the effect on the services' budgets of transfers and changes to the standard price.

To determine the extent to which DOD has considered options for adjusting its approach for estimating bulk fuel costs and managing working capital funds, we reviewed related studies and recommendations that we identified through interviews with DOD officials and literature searches that discuss options available to DOD to adjust its approach to managing bulk fuel costs and working capital funds. For this review we focused on relevant studies that have been conducted since 2004. We interviewed DOD officials to determine the status of any findings and recommendations from these studies related to DOD's bulk fuel pricing or management of the Defense-wide Working Capital Fund. We also reviewed documentation that describes DOD's current approach for estimating bulk fuel costs, including budget-justification materials and DOD reports, and discussed the department's approach with officials from the Office of the Under Secretary of Defense (Comptroller), DLA, and the Office of Management and Budget. We compared this information with cost-estimating practices established in GAO's Cost Estimating and Assessment Guide² and Office of Management and Budget³ and DOD guidance.⁴ We also interviewed officials from DOD, the Office of Management and Budget, and the Department of Energy to discuss current fuel market conditions and alternative approaches to estimating bulk fuel costs and reviewed Department of Energy reports describing current fuel market conditions. To better understand the fuel market conditions, we reviewed DLA fuel purchase data for fiscal years 2009 through 2013 and compared the amount of domestic fuel purchases with

²GAO, *GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs*, [GAO-09-3SP](#) (Washington, D.C.: March 2009). The methodology outlined in the Cost Estimating and Assessment Guide is a compilation of best practices that federal cost-estimating organizations and industry use to develop and maintain reliable cost estimates throughout the life of an acquisition program.

³OMB Circular No. A-11, *Preparation, Submission, and Execution of the Budget* (July, 2013).

⁴Department of Defense Financial Management Regulation 7000.14-R, Volume 2B (September, 2010).

the amount of international fuel purchases. We also performed analysis on the relationship of the West Texas Intermediate (WTI) crude oil benchmark with other crude oil pricing benchmarks to determine whether DOD's approach to setting its standard price reflects current market conditions. Further, we conducted an analysis on the relationship of crude oil prices with refined product costs, including the cost of commercial jet fuel.

To determine the reliability of the fuel cost data provided to us by DOD, we obtained information on how the data were collected, managed, and used through interviews with and questionnaires to relevant officials. We assessed the reliability of the data collected by analyzing questionnaire responses from Office of the Under Secretary of Defense (Comptroller) and DLA officials, which included information on their data system management, data quality-assurance processes, and potential sources of errors and mitigations of those errors. To determine the reliability of monthly cash balances in the Defense-wide Working Capital Fund, we (1) obtained and analyzed reports containing detailed data on transactions affecting the Working Capital Fund cash balance including collections, disbursements, direct appropriations to the fund, and funds transferred into and out of the fund; (2) reconciled year-end cash balances between DOD reports and Department of the Treasury records; and (3) obtained and analyzed documentation supporting the amount of funds transferred in and out of the Working Capital Fund. To determine the reliability of DLA fuel purchase data, we compared DLA domestic and international fuel purchases against fuel purchase data provided in DOD's budget-justification materials. To determine the reliability of the Energy Information Administration's data on Brent, WTI, and commercial jet fuel prices, we reviewed information on its methodology and data quality guidelines in accordance with GAO guidance on assessing data from federal statistical databases. Based on our review of the data, we determined that the data presented in our findings were sufficiently reliable for the purposes of this report.

We interviewed officials, and where appropriate obtained documentation, at the following DOD locations:

- Office of the Under Secretary of Defense (Comptroller);
- Office of the Assistant Secretary of Defense for Operational Energy Plans and Programs;
- Defense Logistics Agency, Energy Management Activity Group;
- Air Force Petroleum Agency;

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- Office of the Secretary of the Air Force, Financial Management and Comptroller;
 - Army Petroleum Center;
 - Naval Supply Systems Command; and
 - Headquarters, Marine Corps, Programs and Resources, Operations and Maintenance Budget Formulations Branch.

We also interviewed other officials from the following federal agencies and other organizations:

- Office of Management and Budget;
- Department of Energy, Energy Information Administration; and
- Institute for Defense Analyses.

We conducted this performance audit from November 2013 to July 2014, in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: Studies on Department of Defense Bulk Fuel Pricing and Management of the Defense-Wide Working Capital Fund

This appendix contains a list of six studies conducted since 2004 on the Department of Defense’s (DOD) bulk fuel pricing and management of the Defense-wide Working Capital Fund. Table 3 provides information on each study’s name and purpose, as well as any findings and recommendations, and DOD’s response to the recommendations or status of their implementation. Some of the studies listed below included information outside the scope of our review; however, we have only included findings and recommendations related to DOD’s bulk fuel pricing or management of the Defense-wide Working Capital Fund.

Table 3: Studies on DOD Bulk Fuel Pricing and Management of the Defense-Wide Working Capital Fund

Purpose	Findings and recommendations	DOD response
Defense Business Board: Recommendations related to the practical use of fuel hedging for DOD, March 2004		
To examine potential ways to reduce DOD’s exposure to fuel price volatility by hedging in commercial markets.	<p>Finding</p> <p>DOD could feasibly hedge its fuel purchases, which includes purchasing financial instruments to minimize risk in future prices.</p> <p>Recommendations</p> <ol style="list-style-type: none"> DOD should not engage in hedging in commercial markets. DOD should propose that the Office of Management and Budget (OMB) consider seeking legislative authority for DOD to engage in “nonmarket” hedging by entering into an agreement with the Department of the Interior to mutually offset dollar variances resulting from fuel price volatility. 	DOD reported that OMB is not supportive of an agreement with the Department of the Interior because the current arrangement is neutral from a government-wide budget-scoring perspective—OMB’s evaluation of the effect that changes in fiscal policy will have on the federal budget.
Secretary of Defense: Report to Congressional Defense Committees—Budgeting for Fuel Cost Fluctuations, February 2007		
To report on budgeting for fuel cost fluctuations.	<p>Findings</p> <ul style="list-style-type: none"> Current DOD fuel forecasting methodology produced results as good as or better than the majority of other fuel forecasters. Changing forecasting sources or methods may not provide more realistic estimates. <p>Recommendations</p> <p>The study did not make any recommendations.</p>	Not applicable.

**Appendix II: Studies on Department of Defense
Bulk Fuel Pricing and Management of the
Defense-Wide Working Capital Fund**

Purpose	Findings and recommendations	DOD response
Defense Business Board: Re-examining Best Practices for DOD Fuel Acquisition, July 2011		
To identify private-sector best business practices for purchasing fuel in large volumes.	<p>Finding</p> <p>Current private-sector best practices for managing fuel price protection would reduce uncertainty and risk related to future fuel prices.</p> <p>Recommendations</p> <ol style="list-style-type: none"> 1. Defense Logistics Agency (DLA) should request fuel price quotes from suppliers both with and without a “price adjustment” feature. 2. DOD should solicit proposals for Fuel Price Risk Management services from private sector firms to advise on or manage fuel price exposure. 3. DOD should revisit the possibility of an intragovernmental price stability agreement with the Department of the Interior—transferring funds between the Department of the Interior and DOD depending on which department benefits from unanticipated fuel price increases. 	<p>DOD reported that recommendation 1 would result in additional expenses to DOD and that suppliers have indicated that they do not currently sell fuel to large customers under long-term contracts at firm-fixed prices.</p> <p>DOD reported that the Assistant Secretary of Defense for Operational Energy Plans and Programs is considering recommendation 2, but that no decision had been made to pursue it as of April 2014.</p> <p>DOD reported that OMB is not supportive of an agreement with the Department of the Interior because the current arrangement is neutral from a government-wide budget-scoring perspective—OMB’s evaluation of the effect that changes in fiscal policy will have on the federal budget.</p>
Department of Defense: Revolving Funds Operational Cash Balances, January 2012		
To determine a sufficient operational level of cash that each of DOD’s revolving funds should maintain in order to sustain a single rate or price throughout the fiscal year.	<p>Finding</p> <p>Fuel cost volatility poses a major threat to the Defense-wide Working Capital Fund’s solvency and can require funding reallocations that disrupt investment programs or threaten readiness.</p> <p>Recommendations</p> <ol style="list-style-type: none"> 1. Authorize DOD to transfer expiring unobligated balances, with appropriate controls, from its appropriation accounts to the Working Capital Fund cash account to build a reserve for fuel cost increases. 2. Allow the Working Capital Fund to accumulate positive operating results and develop a cash reserve to mitigate the effects of fuel market volatility. 	<p>DOD reported that OMB does not support recommendation 1 because of budget scoring issues—OMB’s evaluation of the effect that changes in fiscal policy will have on the federal budget.</p> <p>DOD reported that it is currently updating its Financial Management Regulation to allow for greater flexibility in developing cash balance targets for the Defense-wide Working Capital Fund (expected to complete in summer of 2014).</p>

Appendix II: Studies on Department of Defense
Bulk Fuel Pricing and Management of the
Defense-Wide Working Capital Fund

Purpose	Findings and recommendations	DOD response
Business Executives for National Security: Finding Efficiencies in the Business of Defense: Reducing Fuel Cost for the Defense Logistics Agency, February 2013		
To analyze a series of prior recommendations aimed at improving DLA's fuel procurement operations and highlight additional practices to improve DLA's fuel procurement and distribution system.	<p>Findings</p> <ul style="list-style-type: none"> Current budgeting practices have created considerable budgeting inefficiency. -In recent years the standard price has created additional volatility for both DLA and its military services customers. Standard price is the biggest challenge in the agency's businesslike buyer-and-seller approach to bulk fuel. <p>Recommendation</p> <p>Increase intradepartmental pressure to give DLA Energy added input into the standard price formulation process.</p>	DOD reported that fuel pricing guidance is one of the responsibilities of the Office of the Under Secretary of Defense (Comptroller). DLA operates through the Defense-wide Working Capital Fund and is DOD's sole source fuel provider. In this role DLA is an integral part of DOD's price setting. During the price-setting process, DLA determines the nonproduct costs of the standard price, and its market research office provides independent product projections as input to the product costs, which are used in the development of the standard price.
Institute for Defense Analyses: Fuel Price Effects on Activity and Readiness, September 2013		
To provide context for DOD to assess the significance of the fuel pricing changes while considering the magnitude of historical unbudgeted requirements.	<p>Finding</p> <p>There is no significant evidence from the military services that unbudgeted fuel price fluctuations have caused reductions in readiness over the long term or within a fiscal year.</p> <p>Recommendation</p> <p>DOD should consider potential mitigating policies, including alternative budgeting strategies, and explore specific "what if" case studies on unbudgeted fuel requirements.</p>	DOD reported that it continually evaluates policies and strategies to mitigate pricing increases. This study was completed too recently to be considered for any updated policies.

Source: GAO analysis of DOD data. | GAO-14-595

Appendix III: Comments from the Department of Defense



COMPTROLLER

OFFICE OF THE UNDER SECRETARY OF DEFENSE

1100 DEFENSE PENTAGON
WASHINGTON, DC 20301-1100

Mr. Asif A. Khan
Director
Financial Management and Assurance
U.S. Government Accountability Office
441 G Street, N.W.
Washington, DC 20548

JUN 25 2014

Dear Mr. Khan:

Enclosed is the Department of Defense (DoD) response to the GAO draft report (GAO-14-595), "Bulk Fuel Pricing: DoD Needs to Re-Evaluate its approach to Better Manage the Effect of Market Fluctuations", dated July 2014, (GAO Code 351876).

Sincerely,

A handwritten signature in blue ink, appearing to read "John P. Roth", is written over a horizontal line.

John P. Roth

Enclosure:
As stated

**GAO DRAFT REPORT DATED MAY 30, 2014
GAO-14-595 (GAO CODE 351876)**

**“BULK FUEL PRICING: DOD NEEDS TO RE-EVALUATE ITS APPROACH TO
BETTER MANAGE THE EFFECT OF MARKET FLUCTUATIONS”**

**DEPARTMENT OF DEFENSE COMMENTS
TO THE GAO RECOMMENDATION**

RECOMMENDATION 1: The GAO recommends that the Secretary of Defense direct the Office of the Under Secretary of Defense (Comptroller), in coordination with the Defense Logistics Agency, to re-evaluate the approach for estimating the components of the standard price.

DoD RESPONSE: Concur with comment. This is an ongoing effort within the Department of Defense. The Office of the Under Secretary of Defense (Comptroller) and the Defense Logistics Agency are continually evaluating methods to better estimate the price of fuel. We take the responsibility of maintaining a stabilized price through the year of execution very seriously. The challenge remains that rate setting process takes place a budget cycle in advance of execution. Fuel market volatility is the wild card in the Working Capital Fund’s ability to budget for, and customers’ ability to buy, fuel at a stabilized price. The Department does not have storage capacity to hold a year’s worth of fuel purchased in advance, so fuel is purchased in real-time throughout the execution year and sold at a price set 18 months prior.

RECOMMENDATION 2: The GAO recommends that the Secretary of Defense direct the Office of the Under Secretary of Defense (Comptroller), in coordination with the Defense Logistics Agency, to document its assumptions, including providing detailed rationale for how it estimates each of these components.

DoD RESPONSE: Partially Concur. The Department does not have a “documented” specific; step by step process to develop the fuel price. The OUSD (C) prices fuel by using a formal process that has been presented to the Department’s leadership, briefed to congressional staffers, discussed with the Administration, and reproduced in various instructional and informational briefings and papers. The process for setting the price of fuel is a closely monitored (both inside and outside the Department) formal process that is similar to other Working Capital Fund products. The process follows the intent of the Financial Management Regulation and congressional implementing language for full cost recovery.

Appendix IV: GAO Contacts and Staff Acknowledgments

GAO Contacts

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Asif A. Khan, (202) 512-9869 or khana@gao.gov

Staff Acknowledgments

In addition to the contacts named above, Gregory Pugnetti, Assistant Director; Matthew Ullengren, Assistant Director; Pedro Almoguera; Russell Bryan; Virginia Chanley; Stephen Donahue; Adam Hatton; Joanne Landesman; Amie Steele; and Michael Willems made key contributions to this report.

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